

# First record and redescription of wolf spider *Pardosa oriens* (Araneae, Lycosidae) from India

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## Abstract

Genus *Pardosa* incorporates species morphologically resembling each other. As a result, a lot of discrepancies can be observed in the group. This paper reports and redescribes *Pardosa* species *Pardosa oriens* (Chamberlin 1924) for the first time from India.

## Keywords

Kerala, new reports, taxonomy, Western Ghats.

Lycosidae Sundevall 1833, wolf spiders, are 5<sup>th</sup> largest spider family in the world with 2454 species and 127 genera (World Spider Catalog 2022). *Pardosa* C.L. Koch 1847 is the largest genus in the family, with 536 species from the world and 34 species from India. In this genus most of the morphological characters are less informative for species level identification (Wang and Zhang 2014). So, within *Pardosa* at least thirty species groups were proposed, based on the similarity of genital characters (Zyuzin 1979; Wang and Zhang 2014). Zyuzin (1979) suggested 22 species-groups analyzing more than 100 Palearctic *Pardosa* species. The *P. nebulosa*-group is possibly the largest containing at least 66 species from the southern Palaearctic, southern and Southeast Asia, Africa and the Mediterranean regions (Marusik and Ballarin 2011). Out of this 66, five species belong to *P. nebulosa*-group were already reported from India. From literature survey, we are confident to assign 5 more species from India, *P. alli*, *P.*

*bastarensis*, *P. rhenockensis*, *P. songosa* and *P. parathompsoni* into this species group. The species mentioned in this paper is also an addition to Indian *P. nebulosa*-group. So, in India there are 11 species belong to this group. As the detailed genitalic descriptions with proper photographs or illustrations is lacking for *P. oriens*, there is necessity of redescribing it. This paper documents the first report and redescription *P. oriens* (Chamberlin 1924) from India based on specimens collected from Gavi, Kerala, India.

All specimens were collected by hand picking method and preserved in 70% ethanol and were studied, photographed and measured using a Leica M205C stereomicroscope, a Leica DFC450 Camera, and LAS software (Ver. 4.13). Epigynes were dissected and internal genitalia were cleared in 10% potassium hydroxide (KOH) solution. Male palps were separated and photographed. Ocular measurements were taken after placing the specimen dorsally. Leg measurements are shown as: total length (femur, patella + tibia, metatarsus, tarsus). All measurements are given in millimetres (mm). The distribution map was produced by using the online mapping software SimpleMappr (Shorthouse 2010). Abbreviations used in the main text are: **ALE** = anterior lateral eye, **AME** = anterior median eye, **BS** = base of septum, **CD** = copulatory duct, **CO** = copulatory opening, **FD** = fertilization duct, **MA** = median apophysis, **MOQ** = median ocular quadrangle, **Pa** = palea, **PLE** = posterior lateral eye, **PME** = posterior median eye, **Sp** = spermathecae, **SS** = septal stem, **St** = subtegulum, **TA** = tegular apophysis, **T** = tegulum.

Family Lycosidae Sundevall 1833

Genus *Pardosa* C.L. Koch 1847

*Pardosa nebulosa*-group

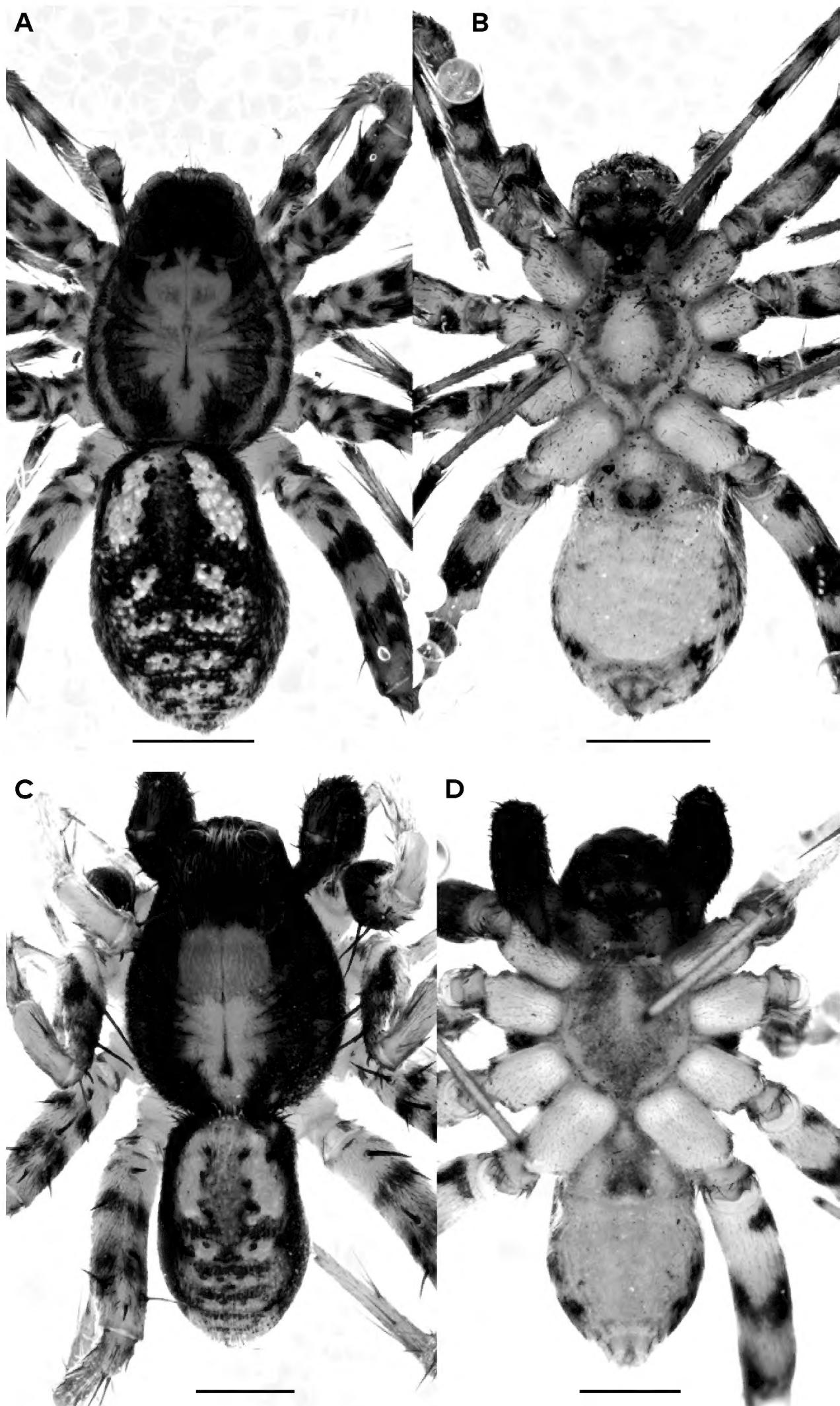
*Pardosa oriens* (Chamberlin 1924) (Figs 1-2)

Materials examined: India • 4♀ 3♂; Gavi, Kerala; 9°43.49' N, 77°16.01' E; 1035.9 m a.s.l.; 8 October. 2021; R.S. Abhijith leg.; CATE558505.

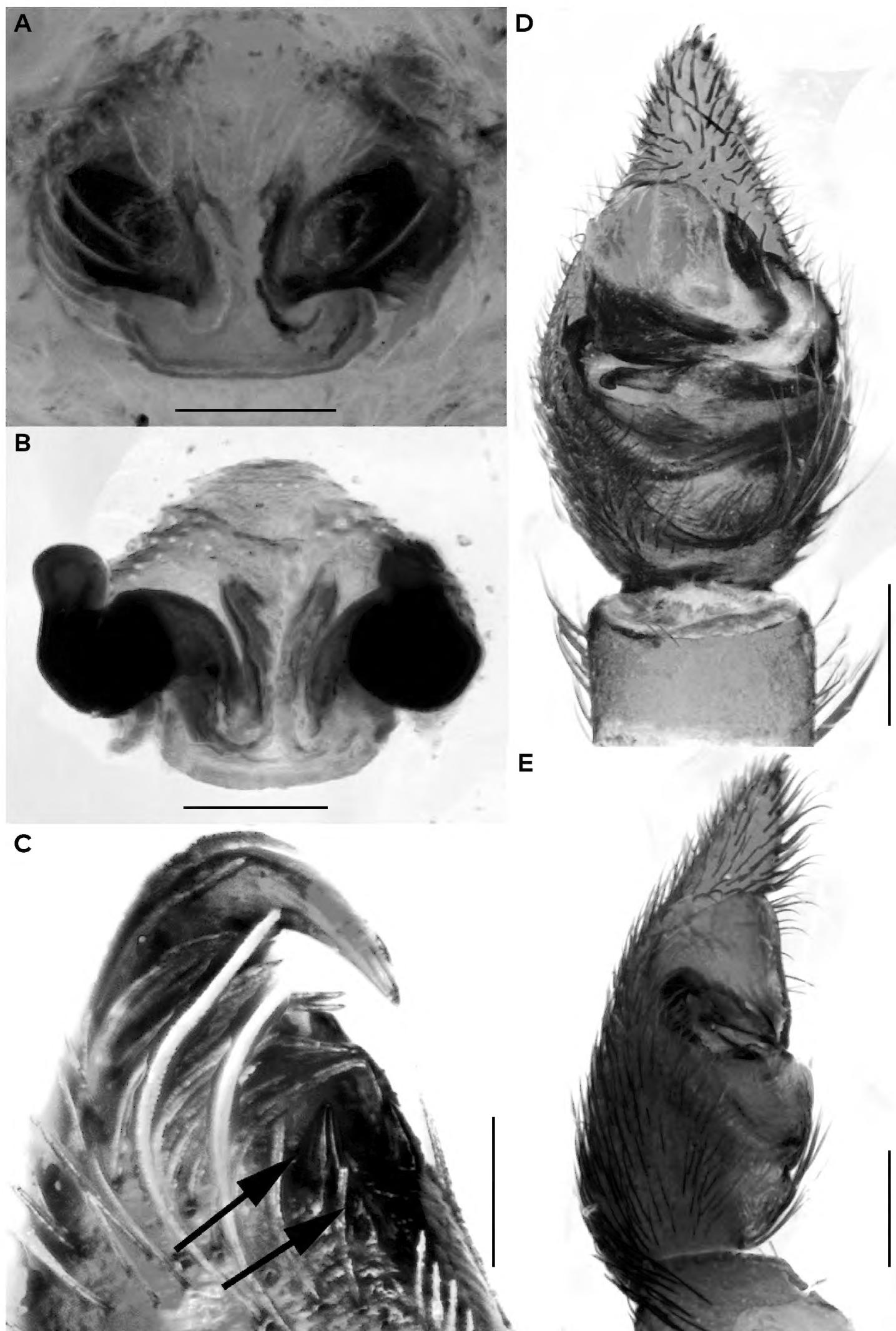
Distribution: Bhutan, South west and south east China, Japan (including Ryukyu Islands), **new to India** (Fig. 3).

Males diagnosed as *Pardosa nebulosa*-group by palp with sclerotized, hook-shaped TA without secondary branch and females by epigynum with inverted T-shaped septum. *P. oriens* is most similar to *P. parathompsoni*, but differs by following set of characters. Ventral view of epigynum with longer SS and lateral arrangement of CD; vulva unique with laterally positioned CD and much wider Sp. Male palp different with longer hook shaped TA; shorter, more curved MA and lack of paleal protrusion towards MA.

Redescription: Male. Total length 2.80. Prosoma 1.43 long, 1.25 wide. Opisthosoma 1.37 long, 0.87 wide. Carapace yellowish brown with distinct longitudinal fovea (Fig. 1C). Fovea non-uniform in width, rather wider in posterior end. A stripe extended from anterior part of fovea to ocular area. Median band greenish yellow, broader, slightly different colour near ocular area and narrower in the posterior end of thoracic area. Paramedian bands much broader than in female, dark greenish brown colour,



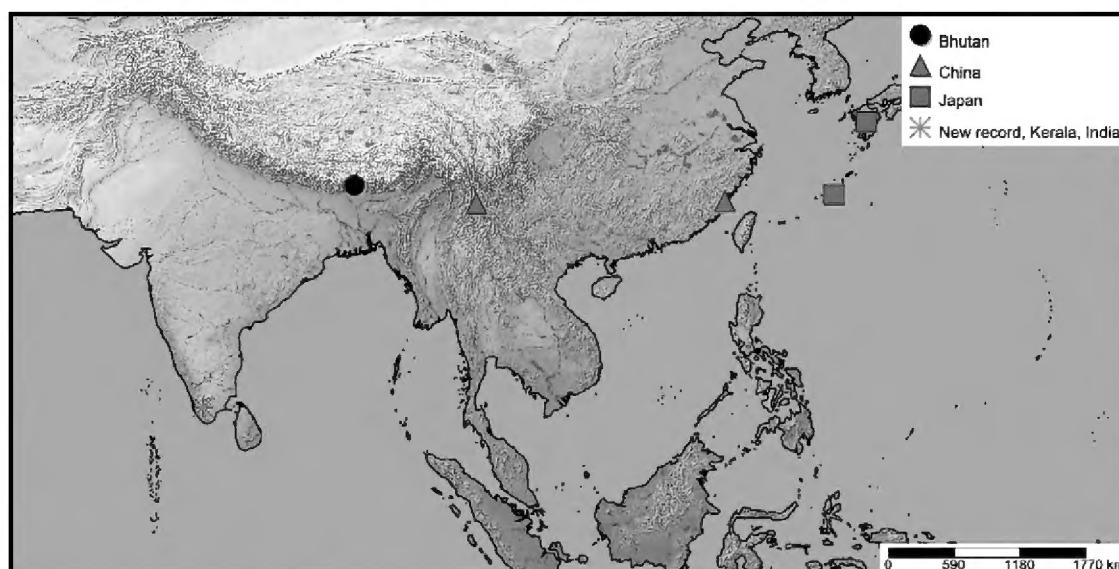
**Figure 1.** *Pardosa oriens* (Chamberlin, 1924), female (A–B) and male (C–D). **A** female habitus dorsal **B** same ventral **C** male habitus dorsal **D** same ventral. Scale bars: 1 mm (A, B); 0.5mm (C, D).



**Figure 2.** *Pardosa oriens*. A epigyne ventral B same cleared dorsal view C female right chelicerae (arrows indicate two retro-marginal teeth) D male palp ventral view E same retrolateral view. Scale bar : 0.1 mm.

uniform in width, continuous throughout the carapace. Ocular area black and hairy. Clypeus without any projections. Eye sizes and inter-distances: AME 0.06, ALE 0.04, PME 0.16, PLE 0.12, AME–AME 0.06, AME–ALE 0.03, PME–PME 0.23, PME–PLE 0.27. MOQ wider posteriorly. Clypeus height 0.10. Labium longer than wide. Chelicera with 3 promarginal and 2 retromarginal teeth. Cheliceral teeth placed separately compared to females. Sternum heart-shaped, wider than in female, clothed sparsely with black hairs (Fig. 1D). Dark wide band along the margin of sternum. Sternum in some males clothed with black hairs without markings. Legs yellow with dark greenish yellow annuli. Leg measurements: I 4.90 (1.19, 1.83, 0.99, 0.89); II 4.98 (1.04, 2.19, 0.99, 0.76); III 4.27 (1.00, 1.38, 1.16, 0.73); IV 6.13 (1.36, 1.99, 1.90, 0.88) Leg formula: 4213. Opisthosoma long oval, less wide than female. Dorsum dark brown with several lateral bands like patterns. Venter yellow. Posterior spinnerets larger than anterior ones. Palp (Figs. 2D–E): T large with a medial projection, TA beak shaped with a tapered tip directed downwards extended just beyond MA; St small and oval shaped, prolaterally placed; Pa large, tent shaped in retrolateral view; MA longer than wide, horizontally extended and curved distally; embolus with a comparatively broad tip originated prolaterally and extended retrolaterally, masked by T.

Female: Total length 3.51. Prosoma 1.67 long, 1.24 wide. Opisthosoma 1.84 long, 1.10 wide. Carapace yellowish brown with a distinct longitudinal fovea (Fig. 1A). Fovea non-uniform in width, rather wider in posterior end. Dark greenish continuous spots present along the margin of carapace. Median band greenish yellow, broader near ocular area and narrower in thoracic area. A small bifurcated extension of median band trespassed into the ocular area. Paramedian bands broad and dark greenish brown colour, uniform in width, continuous, two triangle-shaped patterns present near ocular area. Paramedian bands in join near pedicel in most specimens except in one. Ocular area black and hairy except bifurcated extension of the median band. Clypeus without any projections. Eye sizes and inter-distances: AME 0.06, ALE 0.04, PME 0.16, PLE 0.12, AME–AME 0.06, AME–ALE 0.03, PME–PME 0.23,



**Figure 3.** Distribution map of *Pardosa oriens*.

PME–PLE 0.27. MOQ wider posteriorly. Clypeus height 0.11. Labium longer than wide. Chelicera with 3 promarginal and 2 retromarginal teeth. All teeth arranged closely together in their respective sides (Fig. 2C). Sternum heart-shaped, clothed sparsely with black hairs (Fig. 1B). Dark coloured band along the margin of sternum. Legs yellow with dark greenish yellow annuli. Leg measurements: I 4.25 (1.12, 1.54, 0.83, 0.76); II 3.88 (0.99, 1.39, 0.82, 0.68); III 3.81 (1.01, 1.26, 0.94, 0.60); IV 5.94 (1.50, 1.80, 1.69, 0.95) Leg formula: 4123. Palp 1.57 (0.49, 0.60, 0.48). Opisthosoma long oval. Dorsum dark yellowish brown with several lateral bands like patterns. Venter yellow. Posterior spinnerets larger than anterior ones. Epigynum (Fig. 2A): Hood present. Vulva (Fig. 2B): SS vase-shaped, wider near hood, tapered towards bottom and widens near the BS; CD globular and positioned laterally to SS; Sp positioned upright and parallel to the SS, longer than wide, tip positioned parallel and just higher than the tip of hood. FD indistinct masked by CD.

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